AMENDMENTS TO THE CLAIMS

1.   (Currently Amended) A deception verification system, comprising:

a sensor placement unit having a plurality of sensors;

a digital acquisition unit that receives signals from the sensor placement unit, wherein the digital acquisition unit includes:

one or more multichannel amplifiers,

one or more digital signal processing units, and

a computing unit having one or more processing devices and one or more memories; and

a virtual reality system,

wherein the digital acquisition unit enables real time selection of one or more specific stimuli for presentation to an examinee via the virtual reality system, wherein the one or more stimuli are designed to place cognitive demands on the examinee that disrupt the examinee's ability to conceal a countermeasure used to defeat deception detection.

2.   (Original) The deception verification system of claim 1 wherein the sensor placement unit is wearable.

3.   (Original) The deception verification system of claim 1 wherein the sensor placement unit has approximately eighteen to approximately forty-two sensors, wherein one sensor includes an event channel, wherein one sensor includes a video channel, wherein each remaining sensor includes a multipurpose channel.

4.   (Original) The deception verification system of claim 1 wherein the plurality of sensors receive physiological signals including one or more of electroencephalographic (EEG) signals, electromyographic (EMG) signals, electrooculographic (EOG) signals, electrocardiographic (ECG) signals, body position, motion and acceleration, vibration, skin conductance, respiration, and temperature.

5.   (Original) The deception verification system of claim 1 wherein each of the plurality of sensors includes a surface electrode with an electrolyte plug.

6.   (Original) The deception verification system of claim 5 wherein each electrolyte plug is removably attached to the surface electrode.

7.   (Original) The deception verification system of claim 1 wherein the digital acquisition unit is wearable.

8.   (Original) The deception verification system of claim 1 wherein the digital acquisition unit performs real-time cognitive, stress and motion assessments of continuous signals received from the plurality of sensors and generates one or more of spatial-frequency indices, linear or non-linear data transforms, and normalized data results.

9.   (Original) The deception verification system of claim 1 wherein the virtual reality system includes at least one of virtual reality glasses, an auditory system and a haptic system.

10.   (Original) The deception verification system of claim 1 wherein the virtual reality system includes a structure containing auditory and visual systems.

11.   (Currently Amended) A deception verification system, comprising:

        one or more sensor placement units, wherein each sensor placement unit comprises a plurality of transducer devices;

        one or more multichannel amplifiers, wherein each amplifier ~~receives~~ is capable of receiving one or more signals from at least one sensor placement unit;

        one or more digital signal processing units, wherein each digital signal processing unit ~~receives~~ is capable of receiving amplified signals from at least one multichannel amplifier;

        a first computing unit having one or more processing devices and one or more memories, wherein the computing unit ~~receives~~ is capable of receiving processed signals from at least one digital signal processing unit; and

        a virtual reality system,

        wherein the first computing unit enables real time selection of one or more stimuli for presentation to an examinee via the virtual reality system, wherein the one or more stimuli are designed to place cognitive demands on the examinee that disrupt the examinee's ability to conceal a countermeasure used to defeat deception detection.

12.   (Original) The deception verification system of claim 11, further comprising a second computing unit having one or more processing devices and one or more memories.

13.   (Original) The deception verification system of claim 12 wherein the one or more memories of the first computing unit contain instructions for performing the following:

        sending commands to the virtual reality system to generate one or more stimuli;

        receiving one or more signals from the one or more digital signal processing units representative of physiological occurrences; and

        sending data to the second computing unit representative of the one or more signals.

14.   (Original) The deception verification system of claim 13 wherein the one or more memories of the second computing unit contain instructions for performing the following:

        receiving the data from the first computing unit;

        performing spatial-frequency analysis on the data to obtain information regarding the likelihood of deception; and

        sending the information to the first computing unit.

15.   (Original) The deception verification system of claim 12 wherein the second computing unit is wirelessly connected to the first computing unit.

16.   (Original) The deception verification system of claim 12 wherein the second computing unit is electrically connected to the first computing unit.

17.   (Currently Amended) A method of performing deception verification, comprising:

        stimulating one or more first senses of an examinee with a virtual reality system;

        questioning the examinee;

        determining psychophysiological data from the examinee using a plurality of sensors;

        analyzing the psychophysiological data in real time;

        selecting one or more stimuli for presentation to the examinee, wherein the one or more first stimuli are designed to place cognitive demands on the examinee that disrupt the examinee's ability to conceal a countermeasure used to defeat deception detection; and

        determining a likelihood of deception by the examinee.

18.   (Original) The method of claim 17 wherein at least one of the plurality of sensors is placed on the skin of the examinee.

19.   (Original) The method of claim 17 wherein analyzing the psychophysiological data is performed using one or more computers.

20.   (Original) The method of claim 19 wherein at least one of the computers includes a program containing instructions for performing one or more of the following:

        electrooculographic detection;

        artifact correction;

        spatial filtering;

        frequency filtering;

        wavelet filtering;

        boundary element modeling source localization;

finite element modeling source localization;

adaptive neural network pattern recognition; and

fast fuzzy cluster feature analysis.

21.   (Original) The method of claim 17 wherein analyzing the psychophysiological data comprises:

receiving one or more signals at one or more frequencies for each sensor;

determining a power amplitude of each signal for each sensor; and

analyzing one or more relationships between the power amplitudes for one or more signals from one or more sensors at one or more frequencies.

22.   (Original) The method of claim 21 wherein each of the one or more frequencies is between approximately 1 Hz and approximately 40 Hz.

23.   (Original) The method of claim 17 wherein analyzing the psychophysiological data comprises determining values for one or more of the following:

high-order executive workload;

arousal;

engagement;

attention; and

stress.

24.   (Original) The method of claim 17 wherein the virtual reality system includes at least one of the following:

virtual reality glasses for directing visual stimuli to the examinee;

an auditory system for directing audio stimuli to the examinee; and

a haptic system for directing tactile stimuli to the examinee.

25.   (Original) The method of claim 17 wherein the virtual reality system includes a structure containing at least one of:

an auditory system for directing audio stimuli to the examinee;

a visual system for directing visual stimuli to the examinee; and

a haptic system for directing tactile stimuli to the examinee.

26.   (Original) The method of claim 17 wherein determining the likelihood of deception is based at least in part on presenting one or more particular stimuli using the virtual reality system.

27.   (Currently Amended) A deception verification system, comprising:

a sensor placement unit having a plurality of sensors;

a digital acquisition unit that ~~receives~~ is capable of receiving signals from the sensor placement unit; and

a virtual reality system,

wherein the digital acquisition unit enables real time selection of one or more stimuli for presentation to an examinee via the virtual reality system, wherein the one or more stimuli are designed to place cognitive demands on the examinee that disrupt the examinee's ability to conceal a countermeasure used to defeat deception detection.

28.   (Original) The deception verification system of claim 27 wherein the virtual reality system presents one or more stimuli tailored to an examinee.

29.   (New) The deception verification system of claim 1 wherein the digital acquisition unit further enables real time selection of one or more second stimuli for presentation to an examinee via the virtual reality system in response to the real-time analysis performed using one or more signals received from the examinee via the plurality of sensors in response to the one or more first stimuli.

30.   (New) The method of claim 17, wherein the one or more stimuli affect one or more second senses, wherein the one or more first senses differ from the one or more second senses.